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from which is derived the heat, the energy, the life of the earth. The countless myriads of stars and the numerous planets could be blotted out of existence without sensibly affecting our daily life; but if the sun ceased to shine the days of the world would be numbered. Again, the sun is a typical star and only by a minute and careful study of the solar constitution can we ever hope to derive some knowledge of the condition of the stars and the course of stellar evolution. Yet Mr. Dolmage devotes but eighteen pages to the study of the sun, and gives twenty-five to the moon and forty-four to eclipses. Comets, the ephemeral by-products of the solar system, are given just as much prominence as the sun itself. Again, the lines along which modern research is progressing are not clearly set forth, and the reader is often left in doubt as to who are the real workers and leaders in astronomical thought. Too much prominence is given to the opinions of writers of scientific fiction; it is certainly an innovation in a serious work to find H. G. Wells so freely quoted.

The book is well written and well printed, and it may serve the purpose described by its subtitle as "a popular introduction in non-technical language." The illustrations are well selected and many of the photographs are beautifully reproduced. The three views of the moon, taken from photographs made in the Paris Observatory, are exceptionally well rendered in the plates.

CHARLES LANE POOR

The Royal Society Archives: Some Account of the Letters and Papers of the Period 1741-1806, with an Index of Authors. Compiled by A. H. CHURCH, D.Sc., F.R.S. Pp. 73. Oxford, 1908.

A valuable aid to the student who may wish to consult the original communications made between 1741 and 1806 to the Royal Society of London has been prepared by Dr. A. H. Church, to whom we are already indebted for a manuscript calendar of the collection of guard-books designated as "Classified Papers." An earlier collection of letters addressed to the society or its officers, and comprised in

forty-eight volumes, was indexed by W. E. Shuckard in 1840. The third set of guard-books, which comprises both letters and papers, consists of 127 volumes and these have been grouped in twelve decades, the letters and papers in each of these being numbered consecutively. The series is designated "Letters and Papers." Although most of the material of the letters was published in the *Philosophical Transactions* of the society, they were edited to a considerable extent, and much of the personal note was removed in this way. From among many interesting items noted by Dr. Church in his pamphlet, we select the following:

Decade I., No. 403. In a letter dated May 4, 1745, R. A. F. de Réaumur says:

I heartily wish there was in the world as strong a moral attractive power as there is a natural one that might dispose our two nations particularly to seek to unite by mutual acts of friendship and good will.

Decade II., No. 198. An unpublished letter of Benjamin Franklin, dated February 4, 1750, describes certain experiments in killing hens and turkeys by the electric current. Franklin proceeds to relate his personal experience of an electric shock from the apparatus employed:

In making these Experiments, I found that a man can without great Detriment bear a much greater Electrical Shock than I imagin'd. For I inadvertently took the Stroke of two of those Jars thro' my Arms and Body, when they were very near full charg'd. It seem'd an universal Blow from head to foot throughout the Body, and was followed by a violent quick Trembling in the Trunk, which went gradually off in a few seconds. . . . My Arms and Back of my Neck felt somewhat numb the remainder of the Evening, and my Breastbone was sore for a Week after, as if it had been bruised.

Decade II., No. 494. A letter in Latin from Linnæus, acknowledging his election to the society. A facsimile of this letter is given in Dr. Church's pamphlet.

Decade III., No. 117. A letter, also in Latin, from Josef Stepling, concerning a shower of meteoric stones that fell near Strkow in Bohemia, July 3, 1753. One of these aerolites is now in the British Museum.

Decade IV., No. 84. A letter from the Rev. Wm. Hirst dated Fort St. George, E. Indies, February 25, 1761, offers a careful drawing of a leaf-insect with the remark:

Nature seems to have provided for its security by giving it so strong a resemblance to Blades of Grass among which it is frequently found.

Decade V., No. 60. In a letter dated St. Petersburg, 21 Oct./1 Nov., 1768, in which Leonard Euler alludes to his blindness, occur these words:

As the British Parliament were pleased to reward so generously the slight researches which I had made on the Lunar Theory.

Decade V., No. 80. A letter, dated Rio de Janeiro, November 30, 1768, from Captain James Cook to Dr. Morton, secretary of the Royal Society, wherein Cook writes:

The account we gave of our Selves of being bound to the Southward to observe the Transit of Venus (a Phenomena they had not the Idea of) appeared so strange to these narrow-minded Portuguese that they thought it only an invented Story to cover some other design we must be upon.

Decade VI., No. 40. On March 24, 1774, a paper was read by Edward Spry, a well-known surgeon of the day, explaining his antiseptic treatment of amputations by the use of a special dressing, "preventing putrescence."

Decade VI., No. 119. Professor John Winthrop, of Cambridge, Mass., described, in a letter dated November 16, 1774, a pictorial hieroglyph inscribed on a rock twenty miles south of Boston, on the Taunton River.

Decade VIII., No. 1. Writing to Sir Joseph Banks, Sir William Herschel names a new star, *Georgium Sidus*.

Decade IX., No. 27. A paper of 19 pages communicated by Pierre Laporterie under date of August 14, 1786, and entitled "Saphir crystal, susceptible de l'étoile a six raions"; not printed.

Decade X., No. 65. Paper by Sir William Herschel on the "Quintuple Belt of Saturn"; read December 19, 1793; not printed.

Decade X., No. 70. Letter of Alessandro Volta regarding Galvani's discoveries; read in January, 1794; not printed.

Decade XI., No. 93. An account of the Andaman Islands and their inhabitants, by

Captain Archibald Blair. 82 pages and map; read April 4, 1799.

Decade XII., No. 28. Description of what he calls a pulmonary calculus, by Philip Crampton. This concretion was seven inches in diameter and weighed 845 grains.

In addition to the names mentioned above, the following are especially noteworthy: John Abernethy, Abbé Jean Jacques Barthélemy, G. B. Beccaria, Comte de Buffon, Charles Burney Mus. Doc., Hon. Henry Cavendish, Duc de Chaulnes, Richard Chenevix, Erasmus Darwin, Sir Humphry Davy, Sir William Hamilton, Rev. John Lightfoot, Jean Hyacinthe de Megalhaens, P. L. M. de Maupertius, Rev. Joseph Priestly. The index contains more than fifteen hundred names, and enables the student to refer without delay to each paper or letter in the collection.

GEORGE F. KUNZ

SPECIAL ARTICLES

A REVISED CLASSIFICATION OF THE NORTH AMERICAN LOWER PALEOZOIC¹

CLASSIFICATIONS of stratigraphic subdivisions are bound to change with the expansion of our knowledge of detail, so that the most recently accepted must still be regarded as a tentative one, to be replaced by a better one when needed, and the knowledge of facts warrants it. The generally accepted classification of the Lower Paleozoic of North America, proposed by Clarke and Schuchert in 1899, is now in part out of harmony with known facts, while recent interpretation of previously known facts still further suggests the desirability of modification. For the *Cambric system* Clarke and Schuchert retained essentially the classification of Walcott, which, so far as it is applicable to the facts, is a perfectly satisfactory one. The Lower Cambrian or Georgian, however, is typically developed only in the Appalachian and western provinces together with the corresponding regions of northeastern and southern Asia. The Atlantic province both of America and Europe

¹ Abstract of a paper read before the joint meeting of the New York Academy of Sciences and eastern geologists, April 6, 1908.